1ST YEAR PHYSICS MOST IMPORTANT 8 MARKS QUESTIONS

GUNSHOT QUESTIONS -2026

Long Answer type Questions (8 Marks)

Work Energy and Power:

1. Develop the notions of work and kinetic energy and show that it leads to work-energy theorem.
2. State and prove law of conservation of energy in case of a freely falling body.

Oscillations :

1. Define simple harmonic motion. Show that the motion of (point) projection of a particle performing uniform circular motion, on any diameter, is simple harmonic.
2. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. What is seconds pendulum?

Thermodynamics:

3. Explain reversible and irreversible processes. or Describe the working of a Carnot engine. Obtain the expression for efficiency.
4. State second law of thermodynamics. How is heat engine different from refrigerator.

1ST YEAR PHYSICS MOST IMPORTANT 4 MARKS QUESTIONS

GUNSHOT QUESTIONS -2026

Motion in a Plane:

1. State parallelogram law of vectors. Derive an expression for the magnitude and direction of the resultant vector.
2. IF |a+b|=|a-b| prove that the angle between a and b is 90
3. Show that the trajectory of an object thrown at certain angle with the horizontal is a parabola.
4. Show that the maximum height and range of a projectile are $\frac{u^2 sin^2\theta}{2g}$ and $\frac{u^2 sin2\theta}{g}$ respectively where the terms have their regular'
5. Define null vector, unit vector and position vector?

Laws of Motion:

1. Explain advantages and disadvantages of friction.
2. Mention the methods used to decrease friction.
3. Why is pulling the lawn roller preferred to pushing it?

4) State Newton's second law of motion. Hence derive the equation of motion F = ma from it.

System of Particles and Rotational Motion:

1. Distinguish between centre of mass and centre of gravity.
2. Define vector product. Explain the properties of a vector product with two examples.
3. Define angular acceleration and torque. Establish the relation between angular acceleration and torque.
4. Define angular velocity. Derive $v = \gamma\omega$.

Mechanical Properties of Solids:

1. Define strain energy and derive the equation for the same.
2. Describe the behaviour of a wire under gradually increasing load.

Gravitation:

1. State Kepler's laws of planetary motion.

2) What is orbital velocity? Obtain an expression for it.

3) Escape is escape velocity? Obtain an expression for it.

4) What is a geostationary satellite? State its users.

Thermal Properties of Matter :

1. Pendulum clocks generally go fast in winter and slow in summer. Why?
2. In what way is the anomalous behaviour of water advantageous to aquatic animals.
3. Explain conduction, convection and radiation with examples.

1ST YEAR PHYSICS MOST IMPORTANT 2 MARKS QUESTIONS

GUNSHOT QUESTIONS -2026

Very Short Answer type Questions (2 Marks)

Physical World:

1) What is the discovery of C.V.Raman?
2) What is the contribution of S.Chandra Sekhar to physics? to physics?

Units and Measurements:

1) Distinguish between accuracy and precision.
2) Distinguish between fundamental units and derived units.
3) Why do we have different units for the same physical quantity?
4) Express unified atomic mass unit in kg.

Motion in a straight line:

1. The states of motion and rest are relative. Explain.
2. How is average velocity different from instantaneous velocity?
3. Give an example where the velocity of an object is zero but its acceleration is not zero.
4. A vehicle travels half the distance L with speed v_1 and the other half with speed v_2. What is the average speed?

Motion in a plane:

1. Two forces of magnitudes 3 units and 5 units act at 60^0 with each other. What is the magnitude of their resultant?
2. $\vec{A} = i + j$. What is the angle between the vector and x-axis?
3. When two right angled vectors of magnitude 7units and 24 units combine, what is the magnitude of their resultant?
4. if $P = 2\hat{i} + 4\hat{j} + 14\hat{k}$ and $Q = 4i + 4\hat{j} + 10\hat{k}$ Find the magnitude of $P + Q$.
5. What is the acceleration of a projectile at the top of its trajectory?

Laws of motion:

1) What is inertia? What gives the measure of inertia?

2) When a bullet is fired from a gun, the gun gives a kick in the backward direction Explain.
3) Why does a heavy rifle not recoil as strongly as a light rifle using the same catridges?
4) Why does the car with a flattened tyre stop sooner than the one with inflated tyres?
5) A horse has to pull harder during the start of the motion than later. Explain.
6) What happens to the coefficeint of friction if the weight of the body is doubled?

Mechanical properties of Fluids:

1) What is the principle behind the carburator of an automobile.
2) What is Magnus effect?
3) Why are drops and bubbles are sperical?
4) Give an expression for the excess pressure in a liquid drop?
5) Give an expression for the excess pressure in an air bubble inside the liquid?
6) Give an expression for the excess pressure for the soap buble in air?
7) What are water proofing agents and water wetting agents ? what do they do?
8) What is angle of contact?

Thermal Properties of Matter:

28. Destinguish between heat and temperature.
29. Can a substances contract on heating? Give an example.
30. Why gaps are left between rails on a railway track?
31. Why utensils arecoated black? why the bottom of the utensils are made of copper?
32. Ventilators provided in rooms just below the roof. why?
33. Does a body radiate heat at 0 K? Does it radiate heat at 0^0 C?
34. What is green house effect? Explain Global warming.
35. State Newton's law of cooling.
36. The roof of building are often painted white during summer why?

Kinetics theory of gases:

40. Define mean free path.

28. When does a real gas behaves like an ideal gas?
29. State Boyle's law and charles law.
30. State Dalton's law of partial pressure
31. What is the expression between pressure and Kinetic energy of a gas molecule?
32. The absolute temperature of a gas is increased by 3 times. what will be the increase in rms velocity of the gas molecule.